

PATENT SPECIFICATION

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(54) ROOFING MATERIAL

(71) I, DOUGLAS FREDERICK RALPH NEWMAN, a British subject, of 53 East Drive, Carshalton Beeches, Surrey, England, do hereby declare this invention, for which I pray that a Patent may be granted to me and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a method of forming a protective covering or layer on a surface, e.g., on a surface such as a roof, floor or the like for the purpose of rendering such surface weather or damp-proof, or on a surface which is to be subsequently covered, e.g. under a floor, road or the like for the purpose of preventing rising damp.

In my co-pending application No. 20067/69 (Serial No. 1268701) there is described and claimed a protective covering for surfaces comprising a curable composition consisting of epoxy resinous material and pitch, the composition being reinforced with glass fibre material.

The present invention has as its object to provide a method of forming a protective covering or layer on a surface which will enable a covering or layer to be obtained which has improved tensile strength characteristics as compared with the protective covering of the aforesaid co-pending application and which is accordingly more suitable for use in those situations where greater tensile strength would be an advantage, e.g., for application over recently applied cement screeds and the like which are liable to cracking through shrinkage.

To this end the present invention provides a method of forming a protective covering or layer on a surface, the method comprising applying to said surface a curable composition comprising epoxy resinous material and pitch, and embedding a textile material in the composition applied to the surface. By the term "textile material" as used herein and in the claims hereof is meant a material woven or

knitted from textile yarns, but not glass fibre materials. 45

Preferably the method comprises applying a first coat of a said composition to said surface, applying textile material over said first coat, and applying a second coat of a said composition over the textile material. 50

The invention also provides a protective covering or layer when formed by the method of the present invention.

The said composition may comprise coal tar pitch, a polyepoxide possessing on average more than one epoxy group per molecule, a mineral filler and a compound which is reactive with the epoxy groups and which possesses more than one amino hydrogen atom per molecule. 55

An example of a suitable mineral filler is a fine particle size hydrous magnesium silicate. 60

The polyepoxide preferably has a molecular weight in the range 350 to 1000 and may consist of polyglycidyl ethers of polyhydric phenols such as diphenylool alkanes. A suitable polyepoxide is 2,2-bis (4 hydroxy phenyl) propane reacted with epichlorhydrin in the presence of a base such as sodium hydroxide or potassium hydroxide. 65

The amino hydrogen containing material may be an amino hydrogen containing polyamide such as may be derived from the reaction of aliphatic polyamines, e.g., triethylene tetramine and tetraethylene pentamine, with dimerised and trimerised ethylenically unsaturated fatty acids, e.g., polymerised linoleic acid. The polyamide preferably has the following properties, viz: amine value 290—320 milligrams of potassium hydroxide per gram, a viscosity of 85—120 poise at 25° C and a specific gravity of 0.96. 70

In addition the composition may include one or more solvents, e.g., in the form of one or more aromatic hydrocarbons such as xylene or in the form of one or more aliphatic alcohols such as butyl alcohol, such solvent or solvents 75

- serving to impart a workable viscosity to the composition at ambient temperatures. Preferably such solvent or solvents are present in the composition in an amount of not more than 5 20% by weight.
- The composition may, in known manner, be produced in two parts adapted to be mixed together just prior to use, the mixture preferably having a useful pot life of one to two days 10 according to ambient temperature.
- The textile material, which acts as a reinforcement, is preferably a material which is proof against or resistant to rotting, such as a suitable synthetic material, and which has 15 a fairly open weave or knit structure. Preferably the textile material comprise a leno-weave nylon fabric which has been surface treated, as by dipping in a suitable resinous material compatible with a composition as aforesaid, e.g., polyvinylalcohol, so that a composition of 20 the kind aforesaid will readily adhere thereto.
- The said composition may be applied to a said surface in any suitable or convenient manner, e.g., may be spread over the surface using 25 a brush, broom, squeegee or the like, or may be sprayed or otherwise applied to the surface.
- If desired a surface dressing, e.g., of stone chippings, decorative mineral granules, or the like may be applied to the covering or layer 30 while the said composition is still tacky so as to adhere thereto.
- WHAT I CLAIM IS:—**
1. A method of forming a protective covering or layer on a surface, the method comprising applying to said surface a curable composition comprising epoxy resinous material and pitch, and embedding a textile material as herein defined in the composition applied to the surface.
 2. A method according to claim 1, which comprises applying a first coat of a said composition to said surface, applying textile material over said first coat, and applying a second coat of said composition over the textile material.
 3. A method according to claim 1, 2 or 3, wherein the pitch is coal tar pitch.
 4. A method according to claim 1, 2 or 3, wherein the composition comprises a polyepoxide 40 possessing on average more than one epoxy group per molecule, a mineral filler and a compound which is reactive with the epoxy groups and which possesses more than one amino hydrogen atom per molecule.
 5. A method according to claim 4 wherein said mineral filler is hydrous magnesium silicate.
 6. A method according to claim 4 or 5 wherein the polyepoxide has a molecular weight in the range 350 to 1000.
 7. A method according to any preceding claim 4 to 6 wherein the polyepoxide consists 45 of at least one polyglycidyl ether of at least one polyhydric phenol.
 8. A method according to claim 7, wherein the polyhydric phenol is a diphenyloxy alkane.
 9. A method according to claim 8, wherein the polyepoxide is 2,2-bis (4 hydroxy phenyl) propane reacted with epichlorohydrin in the presence of a base such as sodium hydroxide or potassium hydroxide.
 10. A method according to any preceding claim 4 to 9, wherein the amino hydrogen containing material comprises an amino hydrogen containing polyamide.
 11. A method according to claim 10, wherein the polyamide is derived from the reaction of aliphatic polyamines, such as triethylene tetramine and tetraethylene pentamine, with dimerised and trimerised ethylenically unsaturated fatty acids such as polymerised linoleic acid.
 12. A method according to claim 10 or 11, wherein the polyamide has an amine value in the range 290—320 milligrams or potassium hydroxide per gram, a viscosity in the range 85—120 poise at 25° C and a specific gravity of 0.96.
 13. A method according to any preceding claim, wherein the composition includes one or more solvents which serve to impart a workable viscosity thereto at ambient temperatures.
 14. A method according to claim 13, wherein said solvent(s) comprise one or more aromatic hydrocarbons such as xylene or one or more aliphatic alcohols such as butyl alcohol.
 15. A method according to claim 13 or 14 wherein said one or more solvents are present in the resin material in an amount of not more than 20% by weight.
 16. A method according to any preceding claim, wherein the textile material is a synthetic material which is proof against or resistant to rotting.
 17. A method according to claim 16, wherein the textile material has an open weave or knit structure.
 18. A method according to claim 17, wherein the textile material comprises a leno-weave nylon fabric.
 19. A method according to claim 16, 17 or 18, wherein the textile material has been surface treated so that a said composition will adhere thereto.
 20. A method according to claim 19, wherein the textile material has been surface treated by dipping in resinous material, such as polyvinylalcohol, compatible with a said composition.
 21. A method of forming a protective covering or layer substantially as herein described.
 22. A protective covering or layer when formed by the method according to any one of the preceding claims.

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